

SELF OPERATING OPENING MECHANISM FOR USE IN A HAND-HELD ELECTRONIC DEVICE

The present invention provides a mechanism (300, 400) and method (500) for rotating at least a first and second housing elements (120, 220) of a device (100) with respect to one another. The first and second housing elements (120, 240) have a common axis of rotation (190), which is substantially perpendicular to a front surface of the device (100). The mechanism (300, 400) includes a wheel (310, 410) having a rounded outer edge (312, 412), which engages a rounded surface (144) of a first housing element (220), which extends at least partly around the axis of rotation (190). The wheel (310, 410) is coupled to the second housing element (120) at a center point (316, 416) about which the wheel (310, 410) is adapted to rotate. The wheel (310, 410) further includes a contact point (318, 418) offset from a center point (316, 416). The mechanism (300, 400) further includes a tension device (320, 420) having a relatively fixed end (324, 424) and a relatively free end (322, 422), which when preloaded, is adapted for supplying a force. The mechanism (300, 400) still further includes a linkage (330, 430) coupled between the free end (322, 422) of the tension device (320, 420) and the offset contact point (318, 418) of the wheel (310, 410) for biasing the wheel (310, 410) toward rotation, and the rotation of the first and second housing elements (120, 220) relative to one another.